CLAIMS

1. A process for the purification of catalytic cracking gasolines containing dienic and/or acetylenic impurities and mercaptans, in which process the feed undergoes a selective hydrogenation step, the effluent obtained is stabilised then undergoes sweetening and the gasoline obtained is degassed to provide a dedienized, stabilized and sweetened gasoline.

2. A process according to claim 1, in which selective hydrogenation is carried out using a catalyst containing 0.1-1% of palladium deposited on a support, at a pressure of 4-50 bar, at a temperature of 50-250°C, and with an hourly space velocity of 1-10 h^{-1}.

3. A process according to claim 2, in which the catalyst also contains 1-20% of nickel.

4. A process according to claim 2, in which the catalyst also contains gold in an Au/Pd (wt/wt) ratio of at least 0.1 and less than 1.

5. A process according to any one of the preceding claims, in which sweetening is carried out at a temperature of 20-80°C, and at a pressure of 1-30 bar.

6. A process according to any one of the preceding claims, in which sweetening is carried out by contacting the stabilized gasoline with a catalyst in the presence of an alkaline base and an oxidizing agent.

7. A process according to claim 6, in which the sweetening catalyst comprises at least one solid mineral phase constituted by an alkaline aluminosilicate, activated charcoal and at least one metal chelate.

8. A process according to any one of the preceding claims, in which the sweetening catalyst comprises 10% to 98% of at least one solid mineral phase constituted by an alkaline aluminosilicate having an Si/Al atomic ratio of 5 or less, 1% to 60% by weight of activated charcoal, 0.02% to 2% by weight of at least one metal chelate and 0 to 20% by weight of at least one mineral or organic binder with a basicity, determined in accordance with American standard ASTM 2896, of more than 20 milligrams of potassium per gram and a total BET surface area of more than 10 m^2/g, and contains a

permanent aqueous phase in its porosity which represents 0.1% to 40% by weight of the dry catalyst.

9. A process according to any one of the preceding claims, in which a portion of the stabilized effluent is recycled to the selective hydrogenation step.

10. A process according to any one of the preceding claims, in which a portion of the dedienized, stabilized and sweetened gasoline is recycled to the hydrogenation step so as to control the hydrogenation temperature.

11. An apparatus for the purification of catalytic cracking gasolines containing dienic and/or acetylenic impurities, and mercaptans, said apparatus comprising at least one selective hydrogenation reactor 3 containing at least one fixed catalyst bed, and having at least one line 1 for introducing a feed, at least one effluent outlet line, and a line supplying hydrogen to the reactor, said reactor being followed by at least one stabilization drum 4 connected to said effluent outlet line, the drum having at least one gas outlet line 5 and at least one stabilized effluent outlet line, and said effluent passing into at least one sweetening reactor 8 comprising at least one effluent inlet line 6 and at least one effluent outlet line , said reactor having close thereto at least one oxidizing agent supply line, said apparatus also comprising at least one drum 9 for degassing the effluent from the sweetening reactor 8, said drum 9 having at least one gas outlet line and at least one outlet line 11 for dedienized, stabilized and sweetened gasoline.

12. An apparatus according to claim 11, further comprising at least one line 12 for recycling stabilized effluent to the hydrogenation reactor.

13. An apparatus according to claim 11 ~~or claim 12~~, further comprising at least one line 13 for recycling dedienized, stabilized and sweetened gasoline to the hydrogenation reactor.

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